

Children find their own way to solve arithmetic problems

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Dr. Lio Moscardini, of the University of Strathclyde's Faculty of Humanities & Social Sciences. Credit: University of Strathclyde

Children with learning difficulties can benefit from being encouraged to find their own way to solve arithmetic problems, according to new research from the University of Strathclyde in Glasgow, Scotland.

A study by Dr Lio Moscardini, in Strathclyde's Faculty of Humanities & Social Sciences, found that [children](#) deal better with arithmetical problems if they can use their own intuitive strategies such as using number blocks, drawings or breaking an equation up into smaller, simpler parts- rather than being instructed in arithmetical facts and procedures.

All the teachers taking part in the study underwent professional

development in children's mathematical thinking before introducing these ideas into their classrooms. Nearly all felt that their pupils had benefited from learning in this way- and several said they had previously underestimated the children's ability and potential.

Dr Moscardini, a specialist in additional support needs, said: "We found that pupils with learning difficulties were able to develop an understanding of arithmetic through engaging in these activities, without explicit prior instruction.

"When teachers have an insight into children's mathematical thinking they can use this knowledge to inform their teaching. The study also supported the view that maths learning isn't just about acquiring a series of skills but is about making sense of problems and building understanding."

The children's solutions, which they had not been taught in advance, included:

- Answering a question about how many children are on a bus after a group gets on by representing two sets of children with cubes, drawings or fingers and joining the sets together
- Splitting up the sum $48 + 25$ by adding 40 to 20, then adding eight and five separately for the total of 73
- Using context and language and modifying the way a problem is phrased. In one question, a boy having 14 stickers and giving six away was changed to him giving away "six of his stickers," allowing a pupil to follow the language of the problem to make sense of it

Some children were able to help out their fellow pupils and became increasingly able to recognise similarities between certain types of problem, enabling them to apply the same solutions.

The children were found to follow the same path in understanding adding, subtraction, multiplication and division as those who did not have the same difficulties.

More information: The research paper, I Like It Instead of Maths, has been published in the British Journal of Special Education ,Volume 37, Issue 3, pages 130-138. [DOI:10.1111/j.1467-8578.2010.00461.x](https://doi.org/10.1111/j.1467-8578.2010.00461.x)

Provided by University of Strathclyde

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